Magnavox SERVICE MANUAL

THE MAGNAVOX COMPANY . SERVICE DEPARTMENT

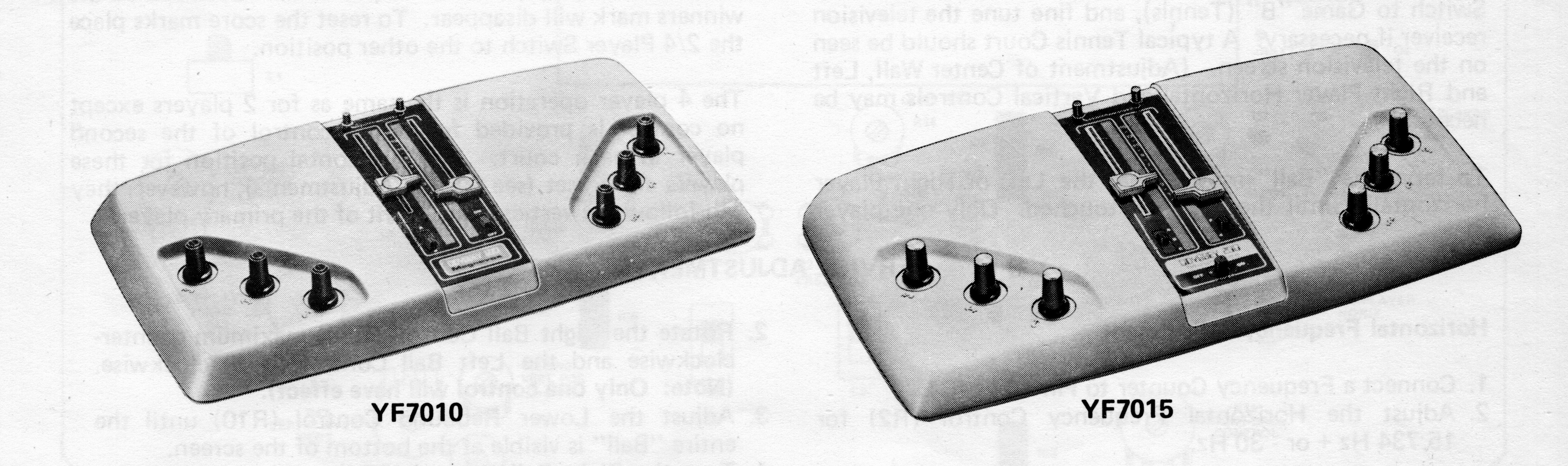
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YF7010 & YF7015 ODYSSEY



GENERAL INFORMATION

The YF7010 and YF7015 can be powered by either 6 "C" cells or an optional AC to DC 9 volt adapter. The basic operation of these units are the same, however, the features differ slightly.

The YF7015 has three games, electronic and mechanical

scoring, and the option of two or four players with Tennis and Hockey.

The YF7010 has two games, mechanical scoring, and two players.

SPECIFICATIONS

	Minimum	Nominal	Maximum
Regulated Voltage Supply Measured at Pin 3 of IC1	4.5 V	5.0V	5.57
Current Drain			
YF7010		45 Ma	
YF7015		65 Ma	
Vertical Sync			
Frequency	59 Hz	60 Hz	61 Hz
Pulse Amplitude	3.5		
Pulse Width	180 usec	210 usec	250 usec
Horizontal Sync			
Frequency	15.704 KHz	15.734 KHz	15.784 KHz
Pulse Amplitude	3.57		
Pulse Width	4.0 usec		7.0 usec
RF Carrier Frequency			
Channel 3	61.22 MHz	61.25 MHz	61.28 MHz
Channel 4	67.22 MHz	67.25 MHz	67.28 MHz
RF Output			
Into 300 ohms	1100 uv		1600 uv

TYPICAL OPERATION (TENNIS)

Connect the 300 ohm twin lead from the Antenna/Game switch to the 300 ohm antenna terminals of a properly adjusted and operating television receiver. Connect the game cord cable from the Odyssey unit to the Antenna/Game Switch and place the Game/TV Switch in the "Game" position.

Place the Channel Switch on the Odyssey to either Channel 3 or 4 and the television VHF Channel Selector to the same channel. (The Channel Switch on the Odyssey is located to the right of the battery compartment).

Place the Power Switch in the "On" position, the Game Switch to Game "B" (Tennis), and fine tune the television receiver if necessary. A typical Tennis Court should be seen on the television screen. (Adjustment of Center Wall, Left and Right Player Horizontal and Vertical Controls may be necessary).

To serve the "Ball" move either the Left or Right Player horizontally until the "Net" is touched. Only one player

will cause the "Ball" to be served.

The game is then played by each opponent operating the Vertical Player, Horizontal Player, and Ball Control for his side of the court. A rebound circuit keeps the "Ball" from going off of the top and bottom of the screen.

If the YF7015 is being used Electronic Scoring Marks will appear in the lower left area of the television screen. These marks will move horizontally to the right each time a point is made indicating which player is ahead. The top mark represents the player in the right court and the bottom mark the left player. After 15 points have been scored the winners mark will disappear. To reset the score marks place the 2/4 Player Switch to the other position.

The 4 player operation is the same as for 2 players except no control is provided for direct control of the second player in each court. The horizontal position for these players are preset (see Service Adjustments), however, they will follow the vertical movement of the primary player.

SERVICE ADJUSTMENTS

Horizontal Frequency Adjustment

- 1. Connect a Frequency Counter to Pin 16 of IC1.
- 2. Adjust the Horizontal Frequency Control (R2) for 15,734 Hz + or 30 Hz.

Vertical Frequency Adjustment

- 1. Connect a Frequency Counter to Pin 14 of IC1.
- 2. Adjust the Vertical Frequency Control (R4) for 60 Hz + or 1 Hz.

Blanking Width & Centering Adjustment

- 1. Connect an oscilloscope to the Composite Video Output at Pin 5 of IC5.
- 2. Apply +3 VDC bias to Pin 8 of IC5.
- 3. Adjust the Blanking Width Control (R70) for 16 usec. width (see Figure 1).
- 4. Adjust the Blanking Centering Control (R71) for 6 usec before horizontal sync (see Figure 1).

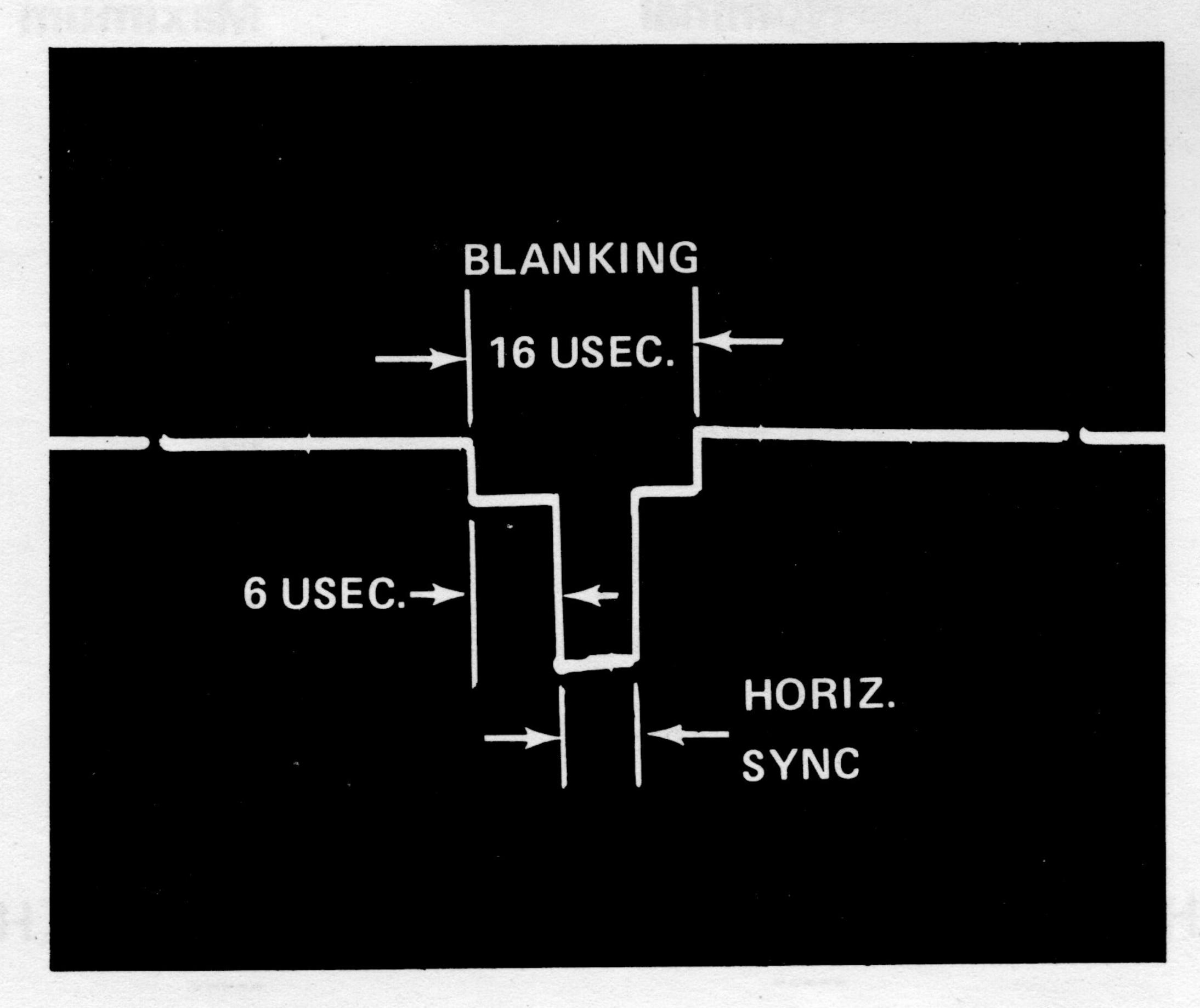


FIGURE 1

Top & Bottom Rebound Adjustment

1. Connect +3 VDC bias to Pin 3 of IC3.

- 2. Rotate the Right Ball Control (R74) maximum counterclockwise and the Left Ball Control (R75) clockwise. (Note: Only one control will have effect).
- 3. Adjust the Lower Rebound Control (R10) until the entire "Ball" is visible at the bottom of the screen.
- 4. Turn the Right Ball Control (R74) maximum clockwise and the Left Ball Control (R75) maximum counterclockwise.
- 5. Adjust the Upper Rebound Control (R9) until the entire "Ball" is visible at the top of the screen.

Note: Place the Game Switch to "C" (Hockey) and the Players switch to "4" for the following adjustments.

Right Wall Horizontal Position

1. Adjust the Right Wall Horizontal Control (R6) until the Right Wall is as close as possible to the right side of the screen and still fully visible.

Goal Opening Position

1. Adjust the Goal Opening Control (R14) until the goal openings in both walls are centered vertically.

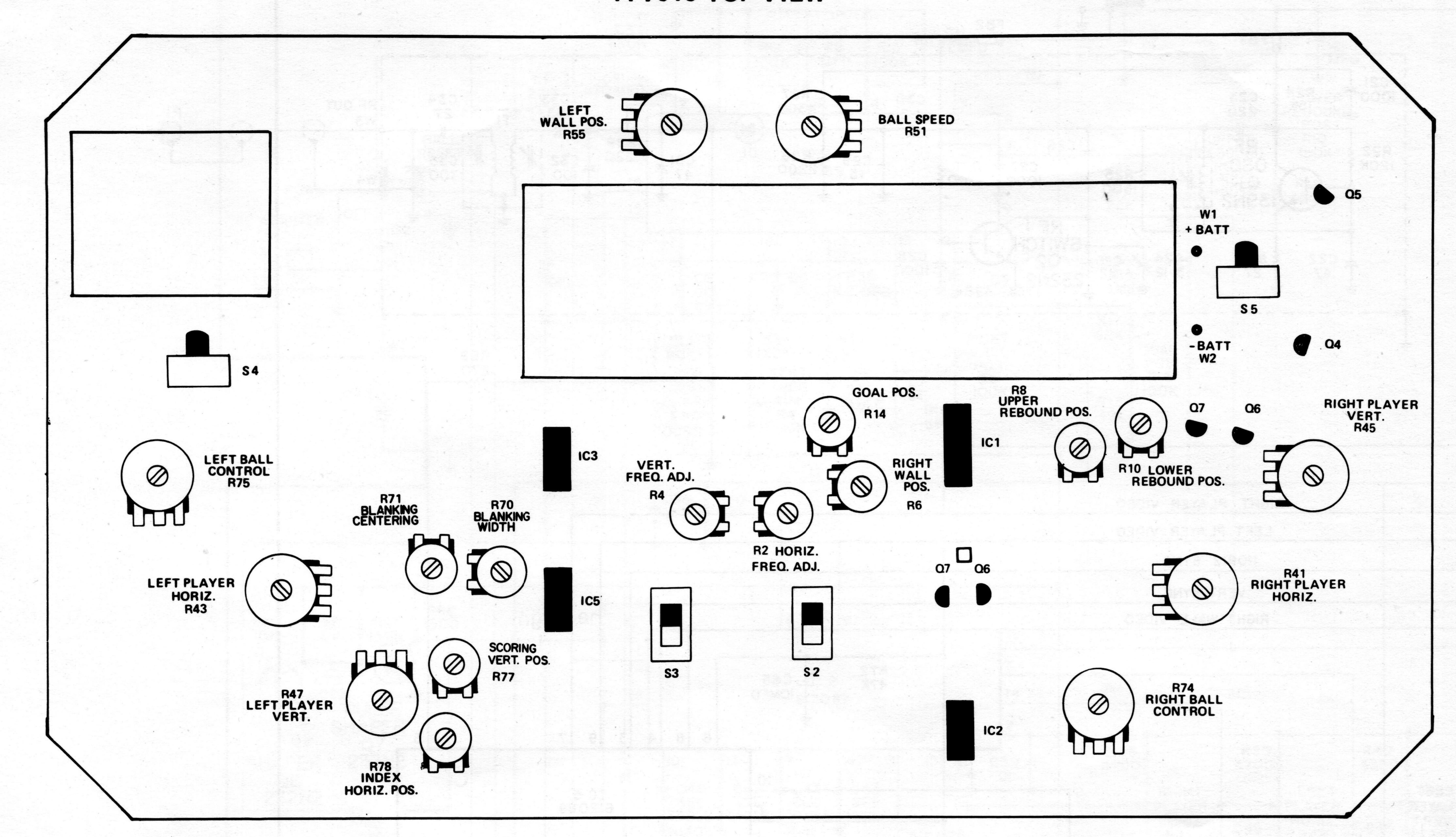
Score Indicator Position

- 1. Adjust the Horizontal Score Control (R78) until the indicators are approximately 1" to the right of the Left Hockey Wall.
- 2. Adjust the Vertical Score Control (R77) until the lowest part of the score indicator is approximately 1½" from the bottom of the screen.

Right & Left Fixed Player Adjustment

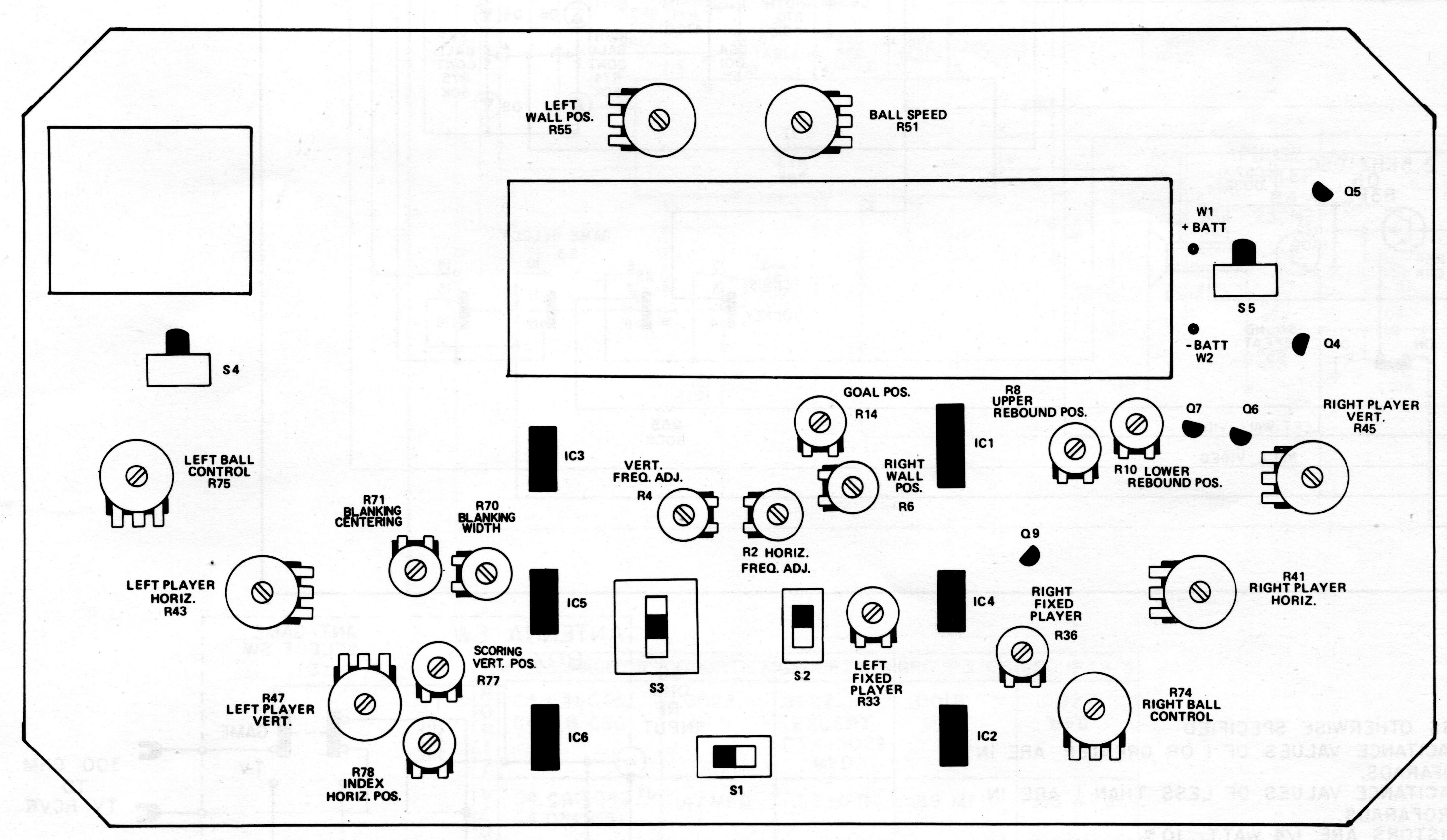
- 1. Adjust the Left Fixed Player Horizontal Control (R33) until the player is approximately its width to the right of the left wall.
- 2. Adjust the Right Fixed Player Horizontal Control (R36) until the player is approximately its width to the left of the left wall.

YF7010 TOP VIEW



EARLY PRODUCTION LOCATIONS

YF7015 TOP VIEW



YF7010 & YF7015 VOLTAGE CHARTS

	1C1			
PIN	VOLTAGE	NOTE		
1 2 3 4 5 6 7 8 9 10 11 12	0V 4.4V 5.2V 0V 2.7V .9V to 1.3V 2.1V to 2.7V 0V .08V 4.7V 1V 2.4V	4 5		
13 14 15 16 17 18	2V to 4.5V .10V 5.2V .40V 3.0V 2.1V	7		

IC2		
PIN	VOLTAGE	NOTE
1	.4٧	
2	5.2V	
3	1.7V to 3.1V	8
4	2.0V	
5	1V to 4.5V	10
6	0V	
7	1.3V	
8	.07V	
9	.08V	
10	1.3V	
11	0V	
12	1V to 4.5V	11
13	.9٧	
14	1.7V to 3.1V	9
15	0V	
16	.15V	

IC3		
PIN	VOLTAGE	NOTE
1 2 3 4 5 6 7 8 9	.4V 5.2V 2.2V to 2.9V .9V to 1.7V 1.7V to 3.7V 0V 1.4V 0V .15V 4.7V	1
11 12 13 14 15 16	5.2V 1.1V to 3.5V 1.4V 1.9V to 3.3V 0V .15V	3

	IC4		
PIN	VOLTAGE	NOTE	
1	.4٧		
2	5.2V		
3	2.1 V to 3.8 V	12	
4	2.2V		
5	1V to 4.5V	10	
6	0V		
7	1.4V \		
8	.07V	•••••	
9	.08V		
10	1.1V		
11	.2V		
12	1V to 4.5V	11	
13	.8V		
14	1.5V to 3.1V	13	
15	0V		
16	.15V		

IC5		
PIN	VOLTAGE	NOTE
1	5.2V	
2	1.3V to 5.2V	14
3	.4V	
4	.15V	
5	1.4V	
6	.03V	
7	.07V	••••
8	.08V	
9	.08V	
10	.15V	
11	0V	
12	.6V to 4.4V	1
13	.6V to 4.4V	1
14	.2V to 5.1V	1
15		
15 16	5.2V 0V	

IC6		
PIN	VOLTAGE	NOTE
1	3V to 5.2V	15
2	.6V to 4.4V	1
3	.03V	
4	2V	
5	4.6V	
6	1.3V	
7	1.4V	
8	1.4V	
9	1.4V	
10	0V	
11	.15V	
12	2.2V	
13	3V to 4.6V	16
14	2.8V	
15	.7V	
16	.4V	

TRAN	SISTOR	VOLTAGE	NOTE
Q4	Ε	00	
	В	.3V to .7V	1
	C	0V to 5.2V	1
Q5	Ε	8.0V	
	В	8.0V	
	C	0V to 3.7V	1
Q6	E	0V	
	В	.08V	
	C	5.1V	
Q7	E	0V	
	В	.65V	
	C	.15V	
Q9	E	5.2V	
	В	6.0V	
	C	9.0V	

)LTAGES TAKEN WITH VTVM, GAME SWITCH IN "B" POSITION (TENNIS), PLAYERS SWITCH IN "4", SOUND ON, PLAYERS NTERED AND "BALL" VOLLEYING BETWEEN.

VOLTAGE VARIES WITH BALL SPEED & DISTANCE TRAVELED. VOLTAGE VARIES WITH RIGHT OR LEFT BALL CONTROL.

VOLTAGE VARIES WITH LEFT WALL POSITION CONTROL. VOLTAGE VARIES WITH LOWER REBOUND CONTROL.

VOLTAGE VARIES WITH UPPER REBOUND CONTROL. VOLTAGE VARIES WITH GOAL POSITION CONTROL.

VOLTAGE VARIES WITH RIGHT WALL POSITION CONTROL.

WOLTAGE VARIES WITH RIGHT PLAYER HORIZONTAL POSITION.

- 9. VOLTAGE VARIES WITH LEFT PLAYER HORIZONTAL POSITION.
- 10. VOLTAGE VARIES WITH RIGHT PLAYER VERTICAL POSITION.
- 11. VOLTAGE VARIES WITH LEFT PLAYER VERTICAL POSITION. 12. VOLTAGE VARIES WITH RIGHT FIXED PLAYER POSITION.
- 13. VOLTAGE VARIES WITH LEFT FIXED PLAYER POSITION.
- 14. VOLTAGE VARIES WITH BLANKING CENTERING & WIDTH.
- 15. VOLTAGE VARIES WITH HORIZONTAL SCORE POSITION.
- 16. VOLTAGE VARIES WITH VERTICAL SCORE POSITION.

IC BASIC FUNCTIONS

- Voltage Regulator
- Vertical Sync Generator
- Horizontal Sync Generator
- Right Wall Generator
- Rebound Circuitry

- Right Player Generator
- Left Player Generator

- Left Wall Generator
- **Ball Generator**

* Not used in YF7010

IC4*


- Right Back Court Player Generator
- Left Back Court Player Generator

- Video Summer
- Video Output
- Audio Pulse Generator
- Logic Circuitry

1C6*

Automatic Scoring Circuitry

YF7010 SCHEMATIC DIAGRA



TH	MING CAPACITORS	GROUP IIC'S	GROUP 2 IC'S	GROUP 3 IC'S	GROUP 4 IC'S
HORIZ	C3, C41, C43, C48, & C50	.0022 MFD	.0027 MFD EXCEPT C3 = .0022 MFD	MFD	.0027 MFD
VERT	C4,C40,C42, C49, & C51	.47 MFD	.56 MFD	.39 MFD	.68 MFD

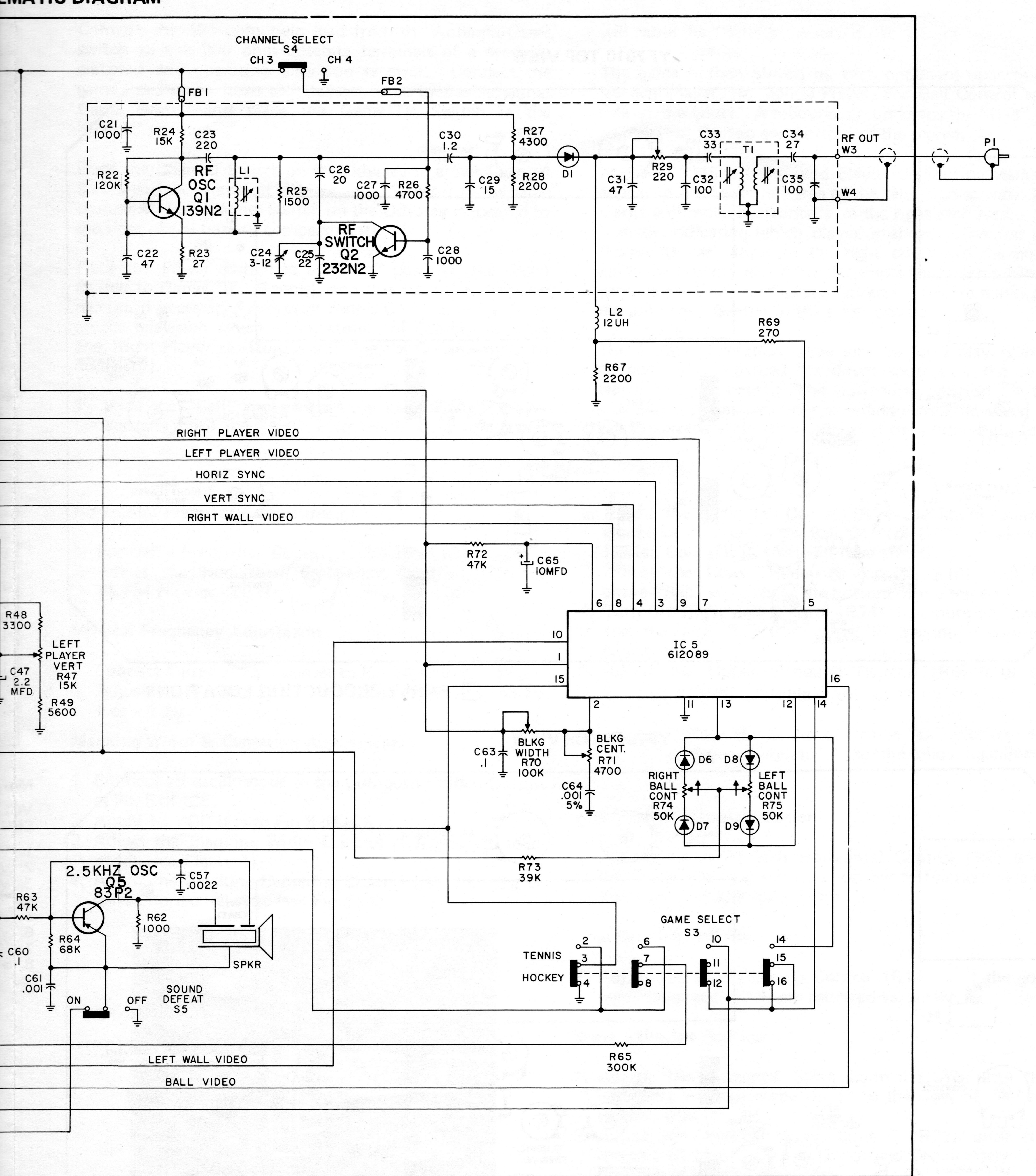
NOTES: UNLESS

I. CAPACITANCE

PICOFARADS.

2. CAPACITANCE AMERICAN MICROFARADS.
3. RESISTORS AF

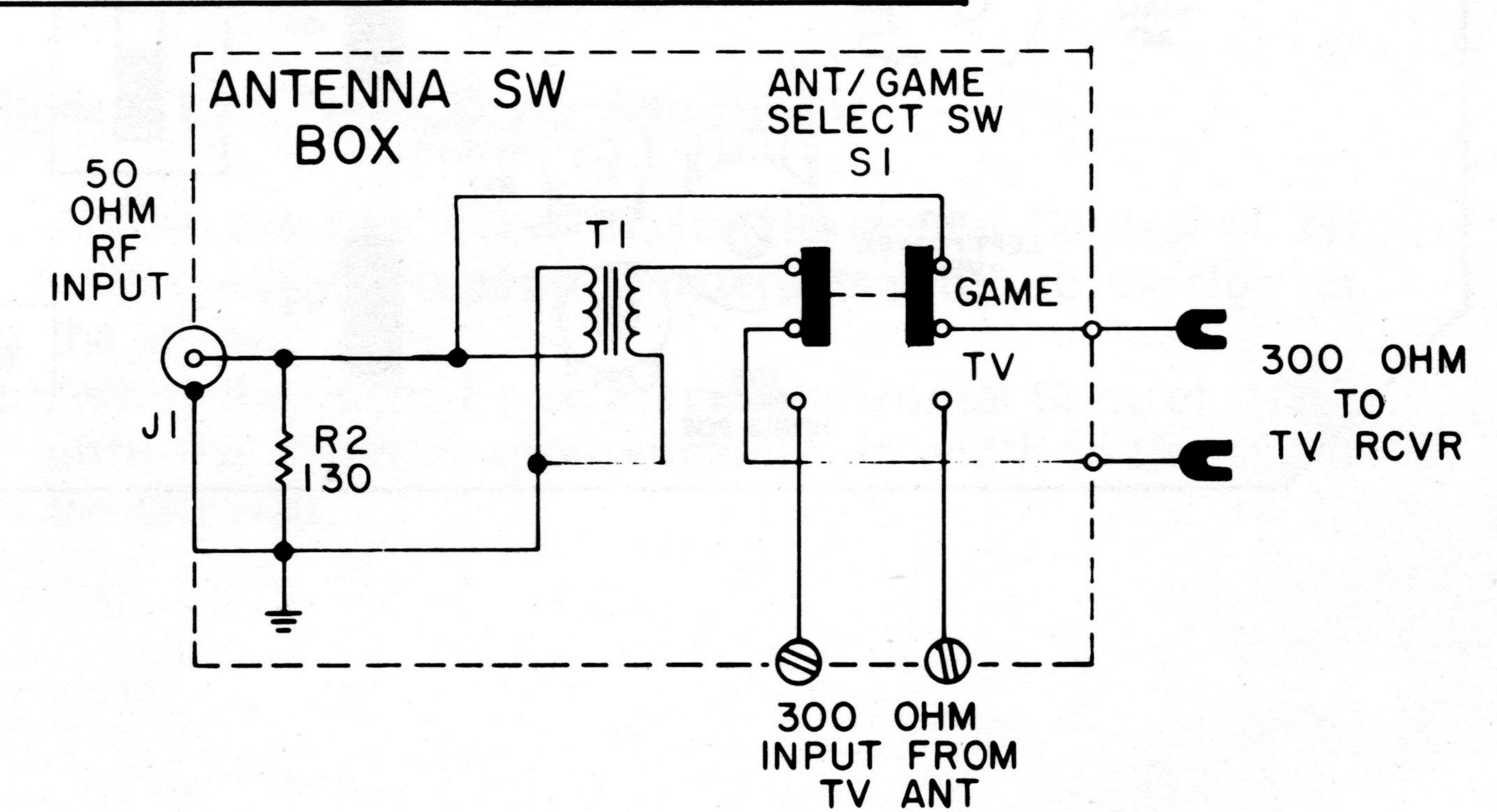
EMATIC DIAGRAM




NOTES:

UNLESS OTHERWISE SPECIFIED:

- I. CAPACITANCE VALUES OF I OR GREATER ARE IN. PICOFARADS.
- 2. CAPACITANCE VALUES OF LESS THAN I ARE IN MICROFARADS.
- 3. RESISTORS ARE 1/4 WATT, 10%.







VE7010 MAIN P.C. BOARD (COMPONENT VIEW)

MAIN TIMENT TO TO THE MAN THE TANK

2




YF7015 SCHEMATIC DIAGRAM



NOTES:

- UNLESS OTHERWISE SPECIFIED:
- I. CAPACITANCE VALUES OF I OR GREATER ARE IN PICOFARADS.
- 2. CAPACITANCE VALUES OF LESS THAN I ARE IN MICROFARADS.
- 3. RESISTORS ARE 1/4 WATT, 10%.



MASTER BOARD REPLACEMENT PARTS LIST

Note: When ordering replacement parts please specify the part number as shown in this list including Description, Chassis, and Model Number. Complete information will help expedite the order. Replacement parts may occasionally differ in part number or value from the Factory installed part. In either event the replacement part has been chosen to provide equal or improved performance.

REF.	DESCRIPTION	PART NO.	REF.	DESCRIPTION	PART NO.
	COILS & TRANSFORMERS		R29	220, RF Adjust	220300-2213
			R33	47K, Left Fixed Player Horizontal	220300-4733
L1	Oscillator Coil	361495-2	R36	47K, Right Fixed Player Horizontal	220300-4733
L2	12 uh Peaking Coil	361425-120	R41	25K, Right Player Horizontal	220311-13
L3	68 uh Peaking Coil	361475-680	R43	25K, Left Player Horizontal	220311-13
T1	RF Transformer	361467-2	R45	15K, Right Player Vertical	220311-12
		00.70, 2	R47	15K, Left Player Vertical	220311-12
	CAPACITORS		R51	50K, Ball Speed	220311-10
	Values, tolerances and voltage ratings		R55	100K, Left Wall Position	220311-11
	for capacitors not listed are shown on		R70	100K, Blanking Width	220300-1043
	the schematic or are 10%, 500V.		R71	4700, Blanking Centering	220300-4723
			R74	50K, Right Ball Control	220311-14
C1	Electrolytic, 470 mfd., 16V	270109-5215	R75	50K, Left Ball Control	220311-14
C2	Electrolytic, 470 mfd., 16V	270109-5215	R77	100K, Vertical Score Position	220300-1043
C5	Polystyrene, 1000 pf., 5%, 150V	250589-1025	R78	220, Horizontal Score Position	220300-2213
C6	Metalized Film, .1 mfd., 10%, 100V	250654-1049	S1	Pwr./On-Off & Ball Reset (YF7015)	160546-3
C9	Electrolytic, 220 mfd., 16V	270109-2215	S2	Pwr./On-Off& Ball Reset (YF7010)	160546-3
C10	Electrolytic, 22 mfd., 10V	270109-2110	S2	Player Select/Score Reset (YF7015)	160546-3
C11	Electrolytic, 22 mfd., 10V	270109-2110	S3	Game Select (YF7010)	160546-1
C12	Electrolytic, 2.2 mfd., 50V	270109-2050	S3	Game Select (YF7015)	160546-2
C19	Electrolytic, 2.2 mfd., 50V	270109-2050	S4	Channel Select Switch	160556-1
C24	Trimmer, 3-15 pf.	250371-6	S5	Sound Defeat Switch	160556-1
C25	Ceramic, 22 pf.,5%,500V,NPO	250546-2205			
C26	Ceramic, 20 pf.,5%,500V,NPO	250546-2005		SEMICONDUCTORS	
C29	Ceramic, 15 pf., 10%, 500 V, NPO	250546-1509			
C30	Ceramic, 1.2 pf., 10%, 500V, NPO	250546-1296	. D1	Germanium Diode	530105-1001
C33	Ceramic, 33 pf.,5%,500V,NPO	250546-3305	D3	Silicon Diode	530181-1001
C34	Ceramic, 27 pf.,5%,500V,NPO	250546-2705	D4	Silicon Diode	530181-1001
C44	Electrolytic, 2.2 mfd.,50V	270109-2050	D6	Germanium Diode	530065-1002
C45	Electrolytic, 2.2 mfd., 50V	270109-2050	D7	Germanium Diode	530065-1002
C46	Electrolytic, 2.2 mfd., 50V	270109-2050	D8	Germanium Diode	530065-1002
C47	Electrolytic, 2.2 mfd., 50V	270109-2050	D9	Germanium Diode	530065-1002
C52	Electrolytic, 10 mfd., 25V	270111-1125	D10	Silicon Diode	530181-1001
C56	Electrolytic, 47 mfd., 16V	270111-5115	IC1	Voltage Reg./Sync Generator	612086-**
C59	Metalized Film, .1 mfd., 10%, 100V	250654-1049	1C2	Player Generator	612088-**
C60 C62	Metalized Film, .1 mfd., 10%,100V	250654-1049 270111-5050	IC3	Ball/Wall Generator Player Generator	612087-**
C62 C63	Electrolytic, 4.7 mfd., 50V Metalized Film, .1 mfd., 10%, 100V	250654-1049	1C4 1C5	Video Summer/Logic	612089-1
C64	Polystyrene, 1000 pf.,5%,150V	250534-1049	1C6	Scoring Logic	612090-**
C65	Electrolytic, 10 mfd., 25V	270111-1125	01	NPN, Silicon	610139-2
C67	Metalized Film, .1 mfd., 10%, 100V	250654-1049	02	NPN, Silicon	610232-2
C68	Electrolytic, 10 mfd., 25V	270111-1125	04	NPN, Silicon	610232-2
C73	Electrolytic, 47 mfd., 16 V	270109-5115	Q5	PNP, Silicon	610083-2
			Q6	NPN, Silicon	610232-2
	RESISTORS		Q7	NPN, Silicon	610232-2
	Values, tolerances, and wattages for		Q9	NPN, Silicon	610232-2
	resistors not listed are shown on the schematic or are 5%, ¼W.		Z1	Zener, 6V	530157-609
	CONTROLS & SWITCHES			MISCELLANEOUS	
			FB1,2	Ferrite Bead	364005-1
R2	10K, Horizontal Frequency Adjust	220300-1032	J1	External Power Jack	181139-2
R4	150K, Vertical Frequency Adjust	220300-1543		Battery Connector	181096-3
R6	100K, Right Wall Position	220300-1043		Game Cable Assembly	361218-3
R8	150K, Upper Rebound Position	220300-1543		Speaker (Ceramic Crystal)	560406-1
R10	150K, Lower Rebound Position	220300-1543		Speaker Housing	181189-1
R14	100K, Goal Position	220300-1043			

^{**} Refer to Charts on Schematic Diagrams

CABINET REPLACEMENT PARTS LIST

Case, Top (YF7010) Case, Top (YF7015) Case, Bottom (YF7010) Case, Bottom (YF7015) Score Pointer (YF7010) Score Pointer (YF7015) Retainer, Score Pointer Knob, Control (YF7010) Knob, Control (YF7015) Score Overlay (YF7010) Score Overlay (YF7015) Switch Inlay (YF7010 Game &	143670-2 143670-1 143669-2 143369-1 143675-2 143675-1 732937-1 143689-4 143689-3 151448-2 151448-1		Switch Inlands Switch Inlands Switch Inlands Chassis Co. Battery Ho. Foot, Black Spring Local Stud, Cover Cross Pin (Customer Customer Cus
	Case, Bottom (YF7010) Case, Bottom (YF7015) Score Pointer (YF7010) Score Pointer (YF7015) Retainer, Score Pointer Knob, Control (YF7010) Knob, Control (YF7015) Score Overlay (YF7010) Score Overlay (YF7015)	Case, Bottom (YF7010) Case, Bottom (YF7015) Score Pointer (YF7010) Score Pointer (YF7015) Retainer, Score Pointer Knob, Control (YF7010) Knob, Control (YF7015) Score Overlay (YF7010) Score Overlay (YF7015) Switch Inlay (YF7010 Game &	Case, Bottom (YF7010) Case, Bottom (YF7015) Score Pointer (YF7010) Score Pointer (YF7015) Retainer, Score Pointer Knob, Control (YF7010) Knob, Control (YF7015) Score Overlay (YF7010) Score Overlay (YF7015) Switch Inlay (YF7010 Game &

REF.	DESCRIPTION	PART NO.	
	Switch Inlay (YF7015 On-Off)	151449-2	
	Switch Inlay (YF7010 On-Off)	151449-4	
	Switch Inlay (YF7015 Game)	151449-1	
	Chassis Cover, Cardboard	643602-2	
	Battery Holder	142658-1	
	Foot, Black	141737-3	
	Spring Lock Nut	103235-1	
	Stud, Cover Holding	732953-1	
	Cross Pin (for Stud)	103236-1	
	Customer Operating Booklet (YF7010)	1B2899-1	
	Customer Operating Booklet (RF7015)	1B2900-2	

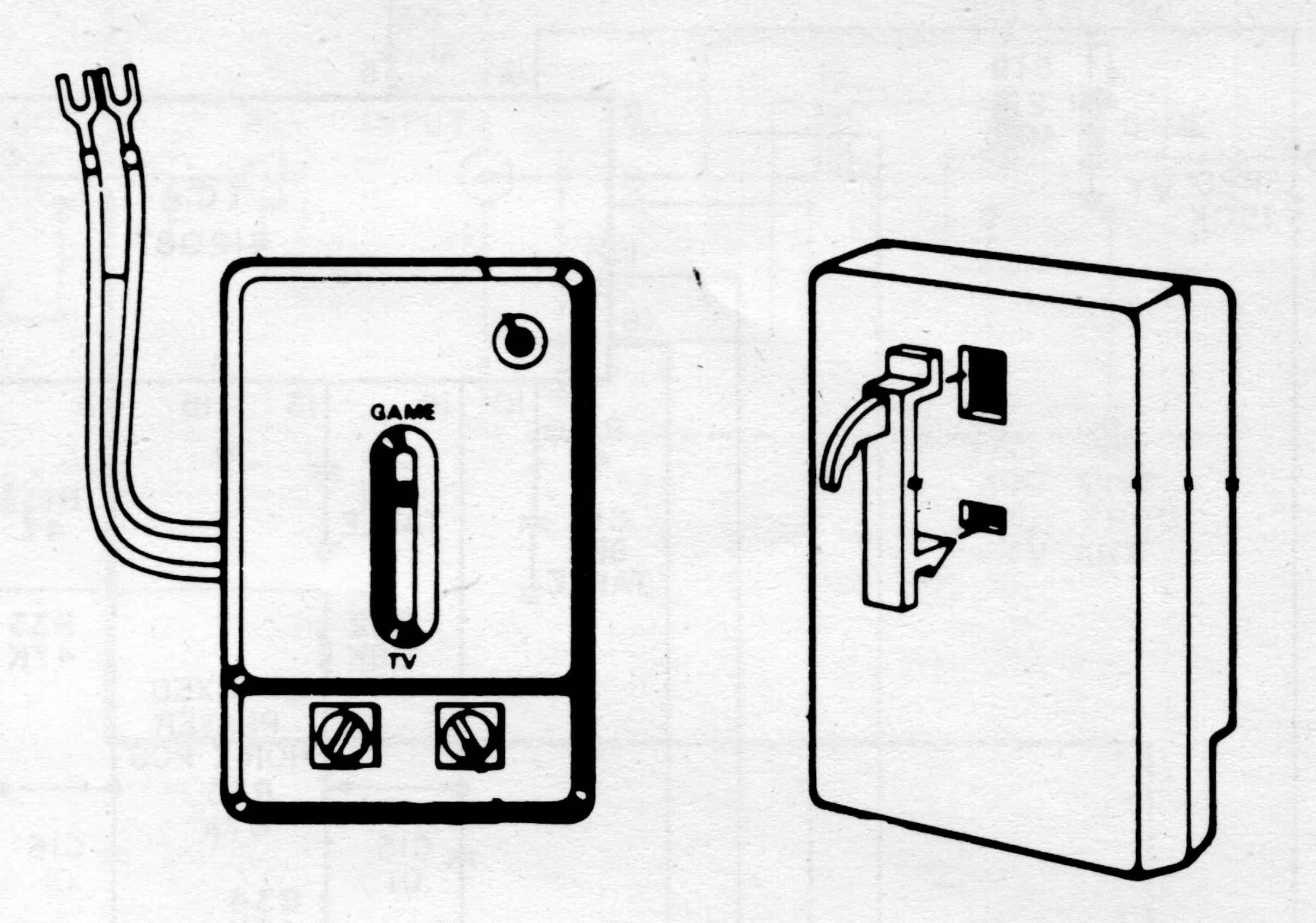
ANTENNA/GAME SWITCH REPLACEMENT PARTS LIST

DESCRIPTION PART NO. Phono Socket 180902-4 Antenna/Game Switch 160499-2 Antenna Balun 361108-2 Case, Bottom 143674-1 Case, Top 143676-1 Plastic Hook 143719-1 Screw, Terminal (2 used) Solderless TErminal (2 used) 200495-1

Complete Antenna/Game Sw. Ass'y.

Game Cable Assembly

ANTENNA/GAME SWITCH



SERVICE NOTES

200517-1

701702-1

361218-3

